

diffuse pus through its serous contents. We certainly may suppose the peritoneum itself to have poured out their purulent matter from its surface (as it is one of the acknowledged morbid products of all serous structures) but why, or wherefore, I must leave to better pathologists than myself. In fine, the case is an apt illustration of the remark, (which I think should be the motto of the disciples of Hahnemann,) that the "practice of physic is the art of amusing the patients, while nature cures the disease."

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ART. V. *Observations on the Pathology and Treatment of Intermittent Fever.* By J. F. PEEBLES, M. D., of Petersburg, Va.

It has been long known, that intermittent fever occurs only in those districts of country, where the materials exist for the generation of its peculiar cause, and when the individual affected has been exposed for a sufficient length of time to the action of this poison, to have that particular condition of the system induced, for it to take on this singular diseased action. How this cause acts, and through what channel it passes, and what is the particular condition of the system it induces to originate this fever, has never been positively determined. Reasoning however from its primary phenomena, and from the order and regular succession in the chain of diseased action, we are induced to hazard an opinion, that the cause of intermittent fever, acts first upon the skin and the nervous expansions ramifying throughout its tissue, producing there, a morbid impression, which is transferred to the brain and spinal marrow, where it continues its mischief in a manner as we shall hereafter show, which produces the paroxysm.

Wherever, however, malaria may primarily attack the system, it is quite certain its first apparent effect is manifested in the skin. The earliest symptoms of intermittent fever come on so gradually and imperceptibly, that the practitioner is rarely able to observe them, unless, as it has been frequently my case, he witnesses them in his own person. In an attack of this fever, many hours before the patient is aware of actual indisposition, the insensible perspiration of the skin is dried up, and the capillary vessels throughout its whole tissue contract, suspend their circulation, and force the blood into the larger interior vessels, leaving the dermoid surface whitened and contracted. This diseased action in the skin is the first link in the chain of the disease, and is soon followed by the second in which the brain and spinal marrow suffers.

The first evidence which the latter organs give of their being involved in the disorder, is manifested in the lassitude complained of by the sufferer and the disposition to yawn, accompanied by an aching pain over the region of the loins and frequently dull headache. Whatever may be the nature of the dis-

order these symptoms indicate in the brain and spinal marrow, it is certain the whole nervous system speedily loses that control it is known to possess over the circulating apparatus, and the heart and arteries, left without its salutary guidance, quickly partake of that diseased action going on in the system, marked by a suspension of the usual vigour in the functions, and the consequence is, as the heart loses its power to send the blood throughout the whole frame, and to maintain an equilibrium in the circulation, that fluid gradually collects in the viscera of the abdomen and fills up the larger internal vessels, more and more clogging the heart's action, as the congestion increases, until a perfect internal congestion is induced which makes and marks the cold fit or stage. This condition of the circulatory system, indicates the supervention of another link in this continuous chain of diseased action, and the symptoms that first manifest it to the patient, are a frequent disposition to sigh to relieve the congestion of the pulmonary vessels, and a short dry cough; but it is made known to the physician at an earlier period by the feeble and small pulse. As these symptoms continue to grow worse, the patient feels a sensation of chilliness creeping over him at intervals, which gradually becomes shortened, and the sensation of cold more disagreeable.

If it has not come on before this period, it is always attended by thirst and an eager desire for the coldest drinks, and now the chain of diseased action is complete, the stomach and its numerous retinue of dependent and associate functions, being also complicated. The sensation of thirst as the disease progresses, becomes extremely distressing, and the stomach becomes so irritable, as to relieve itself often by vomiting, frequently of bilious matter which the disordered secretion of the liver has filled it with. These phenomena proclaim the cold stage of intermittent fever, and its acme is characterized by the following symptoms. A feeling of intense cold which none of the ordinary means will alleviate; great shivering; violent pain in the back and loins; pale and contracted skin; confusion of the intellect; a stiffness in the limbs, with great indisposition to make the smallest change in the posture of the body; thirst and frequent, involuntary sighing. After this condition of the system has continued for a period, variable with the intensity of the attack, the heart and arteries still without the control of the nervous system, and unregulated by its influence, react powerfully, and bring on a state of the system directly opposed to it, which is called the hot stage. The skin in this stage is hot; the headache from being dull and confined, is acute and throbbing; the pulse full and flowing; the desire for cold drinks much increased, and the patient is restless, often delirious. The duration of this stage is modified, and in some measure governed by the one immediately preceding it; when the cold stage has been long and tedious, it often happens that the one immediately preceding it is much shortened, and there is less suffering in it, but on the contrary when the former is short it is frequently the case that the latter is lengthened and the suffering in-

tense. This doubtless depends on which system the most nervous or circulating is influential in bringing on the disorder; frequently the cold stage is lengthened entirely by the morbid sensibility of the nervous influence without much involving the circulatory apparatus, and hence when it is over, there is but little arterial reaction or disturbance; on the contrary a short fit may result solely from want of action in the heart, without involving the nervous system more than is actually necessary to originate this diseased action in the heart, and hence there must be a greater and more continuous reaction. The regular paroxysms of intermittent neuralgia, induced by malaria, prove that there can be a partial and local affection in the nervous system from it, and may we not presume from this fact, that the same poison, under different circumstances, and in different constitutions, has the power of inducing different modifications of disease in the whole nervous system.

The hot stage is terminated by the supervention of copious perspiration, which rapidly abates all the symptoms, and brings on the state of apyrexia or intermission. This perspiration, appearing first on the forehead, passes on from the face until it becomes general, and when examined is found to possess fewer of the salts and less animal matter than the healthy. During the apyrexia or intermission of this fever, the skin retaining the original impression of the malaria, continues pale and contracted, and the features shrunken, whilst there is also disorder in the nervous system, as is shown by the indisposition to mental efforts and the great lassitude of which the patient complains. Before stating the means we have found most beneficial in the management of this disorder, we shall briefly review some of the leading remedies that have from time to time been recommended for its cure. To cut short the cold fit, it is advised by many practitioners, that a full dose of opium should be administered immediately before it is expected to come on. The most prominent condition of the system in this stage as we have already observed, is marked by an absence of circulation in all the external capillary vessels, and a congestion of the visceral organs, and larger internal vessels; hence if opium cuts short the disorder, it must do it by stimulating the heart to action, through its impression on the nervous system, causing it to overcome this congestion, by gradually soliciting, at each succeeding more active throb, the dormant fluid into the circulatory mass, and sending it equally throughout the frame. In many constitutions this remedy, though in this manner effectual, would induce dangerous congestions of the brain by causing too great a rush of blood throughout the organ; it cannot, therefore, be relied upon as a safe remedy or one fit for general use. Dr. McIntosh has recommended bloodletting in this stage of the disorder. Bleeding in the cold stage of intermittent fever is only following the example of Dr. Armstrong and many other practitioners of drawing blood in the congestive form of typhus and other fevers. Although the situation of the patient is similar in congestive fever to that of the cold stage of the

intermittent; that is, the blood is thrown from the surface of the body into the interior, and the heart is prevented from free action, to relieve this condition by the congestion of the organs internally and around it, and the engorgement of the larger vessels; yet this condition is produced by a far different cause; it is a gradual result of the continuation of a disease, and often depends on inflammation of some vital organ acting as a focus, and by its impression on the vital system, withdrawing its power to control the heart's action, draws the whole circulatory fluid, as before mentioned internally and around that organ. Here the symptoms loudly call for depletion to relieve that internal inflammatory action, which is the sole cause of the congestion. But the congestion of intermittent fever, coming on and running as it does to its acme, in a few hours, cannot be the result of internal inflammation. It is solely caused by the loss of power in the nervous system to control the action of the heart and arteries, which speedily brings on a loss of balance in the circulation. Inducing congestion first, which is speedily followed by reaction and its opposite condition. "May not," asks Andral, "the nervous system, in the manner it causes the sudden suffusion of hyperæmia of the cheek in blushing, exert an influence over the production of various pathological congestions? If these internal congestions, in the cold stage of intermittents, are caused by nervous influence, as we have endeavored to demonstrate, we should certainly not look for a remedy in bloodletting." To prove the insufficiency of this remedy in these cases, we will give another passage from Andral. "It is a fact," says this able pathologist, "established by every day's experience, that a hyperæmia may exist singly and independent of any organic lesion, and yet refuse to yield to either local or general abstractions of blood, however copiously employed or judiciously timed. By the employment of bloodletting the organ is relieved of part of its superabundant fluid, the general mass of blood in the circulation is diminished and a powerful cause of excitation is thus withdrawn from the system, but neither by local nor general bleeding can we remove the unknown cause, under the influence of which the hyperæmia was originally developed. If, however, this cause be not particularly active or violent in its operation, its influence may be considerably diminished or completely paralysed by sanguinous abstractions, as the blood is withdrawn from the seat of irritation as often as it tends to accumulate there, and the hyperæmia is thus prevented from establishing itself in the part. But if the exciting cause of the congestion (the Thorn of Van Helmont) be more violent in its action, we shall in vain attempt to remove it by bloodletting; though we leave but one drop of blood in the body, that drop will, in despite all our bleedings, obey the summons of the irritating cause and fly to the part affected." From our experience and observation in this disease, we are led to suggest in the treatment of the cold stage only such remedies as will palliate the symptoms and hasten the necessary reaction. We usually order the patient to be covered in bed, with warm applications to his ex-

tremities, aided by sinapisms when the case is urgent, inducing him at the same time to drink only warm diluents. When the feeling of cold is intense, and the shivering severe, I have found great relief to accrue from the respiration of the steam from hot water. I have had the rigors cut short in my own person, by the use of this simple remedy with a great diminution of the suffering and evident shortening of this stage. This treatment of course should be reversed in the hot stage. It is during the apyrexia or intermission, that the chief remedies should be directed to secure a permanent cure: and the nature of the disease being a morbid derangement of the dermoid tissue, the nervous and circulatory system points out the proper remedies.

The chief indications are to restore the skin to its proper functions, and to brace up the nervous system that it may resume its influence over the circulation, and by arousing the heart's action to maintain a perfect equality in the whole circulatory mass, that it may distribute the blood throughout the frame, preventing all local congestions. In simple intermittent fever remedies answering these ends are all that are required, and the practice of purging the patient with mercurial or other cathartics, so common in the South and with us, is unnecessary and often mischievous. That it is unnecessary, I am convinced by the successful treatment, within the last two years, of upwards of two hundred cases of genuine intermittents in which no cathartic was employed, until after the paroxysm was arrested, and then a cathartic of the mildest kind completed the cure. From the generally simple nature of this disease, and the knowledge of the remedies employed in its cure being possessed by every one, it is often treated without a physician, and the public having fallen into the impression originally obtained from the profession, that active cathartics should always precede the usual tonic remedies, often do great mischief by the injudicious use of drastic purgatives. We have witnessed cases where serious injury and even death have resulted from their untimely administration. A sprightly youth, just returned from a school located in a healthy district of country, came to spend a few weeks at his father's, and after a day or two was seized with chills which generally pervaded the neighbourhood at that time. As soon as the fever was off, a dose of *Peters's Pills* was administered by his father. During the intermission he went about, but was considerably annoyed by the incessant purging of the dose he had taken. This continued, (as no means were taken to arrest it, from the belief it was necessary to have a real clearing out,) the chill came on (no doubt induced by the debilitating influence of the pills) sooner than was expected, and so completely was the system prostrated that it never rallied from the congestion of the cold stage, and the youth died next day. His brother, a few years his senior, coming to his funeral, was taken with the chill—treated in the same manner, with the same result; whilst under a tonic treatment not a case in the whole neighbourhood terminated unfavorably, and these were actually the only deaths

that occurred from the disease, during the whole autumnal season. We consider that cathartics, though they may not always be injurious, are unnecessary in the treatment of this disease, until after the fits have been arrested, then in most cases the mildest kind alone are required.

The preparations of quinine have entirely superseded the use of the cinchona bark, but in obstinate cases it is known they frequently fail to arrest the paroxysm entirely. The quinine acts by its stimulating effects upon the brain and nervous system primarily, secondarily through this impression on the circulatory apparatus, ultimately upon the digestive organs. To its bracing effects upon the nervous system is to be attributed entirely its tonic powers. Hence it can be perceived, that alone, it answers only one of the indications which the nature of the disease points but for its cure, and, therefore, cannot be relied upon as a certain remedy unless assisted by agents to fulfil the other indications. The functions of the skin are at fault, as well as those of the nervous system, and circulatory apparatus—the first named tissue is primarily affected by the disease, hence it must be important in the successful treatment to restore its healthy action also. A diaphoretic and measures to induce diaphoresis, should be always combined with the tonic remedy. The particular preparation we have found most successful is a combination of sulph. quinine and Dover's powder in doses of one and a half gr. of the former to a gr. of the latter given at an hour's interval and commencing early enough before the expected attack, to introduce into the stomach 6 or 8 grs. of the diaphoretic and the quantity of the tonic corresponding. In cases where there was a perfect intermission I have never known this compound to fail. The patient should remain in bed and be allowed to drink freely warm drinks: and when the case is very urgent have mustard poultices applied to his arms and legs. After the fits have been checked, a simple laxative in most cases will complete the cure, unless the long protraction of the disorder has brought on derangement in the visceral organs, then remedies suitable to the correction of this disorder should be employed, and it is a fact that they act with better success, after the paroxysms have been thus checked, than when their operation was liable to be checked by its supervention.

As the loss of healthy action in the skin and its capillaries, and the derangement in the nervous system, are the primary and principal causes of the paroxysm of this fever, they should be corrected and removed before any attempt is made to remove its consequences in the visceral organs; when the contrary course is adopted, the remedies to remove the functional derangement of the liver and the congestion of the spleen, by their irritation in the *perimæ viæ*, increase the disturbance in the nervous system, and favour also the internal collection of the blood, as well as the loss of balance between the internal and external capillary circulation, and hence while they relieve the derangement, for which they are given, they have a tendency to induce the same train of diseased action which originally produced them.

In other words they leave the patient, by this effect, more disposed to internal congestions and the paroxysms of ague. I think the following case will prove the truth of these observations. A gentleman consulted me, who had been affected with ague for six months, during which time he said he had taken his two hands full of blue pills and tonics and tonic mixtures in abundance: all of which checked the disease for a time. I found his skin pale and without the least healthy action—there was an entire absence of all circulation, apparently in its tissue—he was languid, feeble and low spirited—a functional derangement of the liver had rendered his digestion bad, and there was an extraordinary enlargement of the spleen. The ague being of the quotidian type, so soon as the fever left him, we commenced the treatment disregarding the condition of the liver and the spleen with the sulphate of quinia and Dover's powder as directed, assisted by frictions on the skin with coarse towels; placed his lower extremities in a tepid bath into which mustard had been thrown, and caused him to drink freely hot lemonade and coffee. The usual time passed without bringing the paroxysm. The same remedies were continued from day to day with like results, taking care gradually to diminish the quantity of the tonic and diaphoretic and substituting a more generous diet, with slightly stimulating drinks in their place, whilst the bowels were kept freely opened with mild laxatives. In the meantime the size of the spleen began to diminish—the skin began to assume a more healthy appearance and his digestion and appetite was much improved. We now recommended a glass of wine occasionally during the day, a generous diet and active exercise, which in a few weeks restored him to perfect health. Here the functional derangement of the liver and the enlargement of the spleen were caused entirely by the congestion in them, which congestion was caused by that condition in the circulation induced by the condition of the skin and nervous system in the disorder, and though both were removed by the course of mercury and aperients, yet they returned again, because the original cause (the Thorn of Van Helmont) still existed, and it is probable the irritation of their action hastened each succeeding attack. Whereas the simple remedies we employed effected a cure by restoring the balance between the circulation in the capillaries and the great vessels, and by bracing up the nervous system, which stimulated the heart to action, and kept up a free and equal circulation throughout the frame. This removed the congestion in the liver, and enabled it to resume its healthy action, and solicited into the mass of circulation that blood which had remained dormant in the spleen swelling out its tissue to an unnatural extent.

There is a fact connected with this disease that does not seem to be noticed by writers, and which we think goes far to establish our view of its pathology. It is the manner the paroxysms are brought on and controlled occasionally by the nervous system. The operations of the mind have a wonderful influence in protracting the complaint and when properly wrought

on have equally as mysterious a power to correct it. Among the ignorant and superstitious advantage is taken of this influence on the mind, to arrest the complaint. I have seen genuine intermittents arrested without medicine by a system of trickery employed by an old woman, too ridiculous to mention. It was highly important (and she would undertake no other) that the invalid should have perfect confidence in her powers. I arrived on one occasion to see a man, about the same time with this modern sybil, who I found had been first sent for, but during the reaction the situation of the patient became so alarming that I was also called in. Being somewhat relieved as the fever went off, and having full confidence in the old hag as well as an unconquerable aversion to "Doctor's physic," he at once gave her the preference. My incredulity induced me to watch the case—I found, so soon as the silly manipulations of the woman had been finished, the utmost confidence established in the man's mind that he would be no more sick: as soon as he was able he went about his work—thought no more of the chill, and the time actually past without a return, nor did I hear of his being sick any more during the whole season. This man was very poor and ignorant, laboured hard, and his constitution was in that condition always induced by the continual impressions of malaria; that is, his skin was pale and sallow, and there was a want of vigour and activity, as well in the organs of his mind as the functions of the body. Could not her success in this case be attributed to the fact, that the full confidence in her powers induced a degree of excitement in the man's mind, which excitement braced up the nervous system generally, and which, aided by the exercise he took, kept up an equal circulation, preventing all internal congestions without which there could be no paroxysm. In protracted cases, when the hour arrives for the chill to come on, the mind of the individual, having been wrought on by this expectation is exactly in the condition—a state of depression—favourable for bringing on the attack; but suppose this individual believed certainly he would have no attack, how different a state of mind he would be in: instead of composing himself for a chill perhaps setting over a fire or reclining in the sun, he would probably be exercising himself or enjoying company and cheerful conversation. A case came under the observation of my friend Dr. James May of this town, aptly showing the influence of the mind in this disease. A gentleman had been treated 18 months unsuccessfully for this disease—his constitution was sinking under its repeated attacks. After nearly every method of treatment had been exhausted without effect, it was observed by his physicians, that he usually retired to bed shortly before and awaited a certain hour, after which the fit came on. Taking advantage of this circumstance, the clock's hands were removed back without his knowledge, and whilst he lay and awaited it to strike the hour of four, which announced his chill, he fell asleep. After a nap of several hours he awoke, no paroxysm came on and from that hour he regained his health.

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